

**Western Riverside County
Multiple Species Habitat Conservation Plan (MSHCP)
Biological Monitoring Program**



**Northern Goshawk Survey Report 2008
19 April 2009**

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NOTE TO READER:

This report is an account of survey activities undertaken by the Biological Monitoring Program for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP was permitted in June 2004. The Biological Monitoring Program monitors the distribution and status of the 146 Covered Species within the Conservation Area to provide information to Permittees, land managers, the public, the California Department of Fish and Game, and the U.S. Fish and Wildlife Service. Monitoring Program activities are guided by the MSHCP species objectives for each Covered Species, the information needs identified in MSHCP Section 5.3 or elsewhere in the document, and the information needs of the Permittees.

We would like to acknowledge the land managers in the MSHCP Plan Area, who in the interest of conservation and stewardship facilitate Monitoring Program activities on the lands for which they are responsible. A list of the lands where this year's data collection activities were conducted is included in Section 7.0 of the Western Riverside County Regional Conservation Authority (RCA) Annual Report to the Wildlife Agencies.

Partnering organizations and individuals contributing data to our projects are acknowledged in the text of appropriate reports. We would especially like to acknowledge the Santa Ana Watershed Association, the Center for Natural Lands Management, and the Orange County Water District for their willingness to initiate or modify their data collection to complement our survey efforts in 2008.

While we have made every effort to accurately represent our data and results, it should be recognized that our database is still under development. Any reader who would like to make further use of the information or data provided in this report should contact the Monitoring Program to ensure that they have access to the best available or most current data. All Monitoring Program data, including original datasheets and digital datasets are stored in the Monitoring Program office in downtown Riverside, CA.

The primary author of this report was Staff Biologist, Lee Ripma. If there are any questions about the information provided in this report, please contact the Monitoring Program Administrator. If you have questions about the MSHCP, please contact the Executive Director of the RCA. For further information on the MSHCP and the RCA, go to www.wrc-rca.org.

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INTRODUCTION

The northern goshawk (*Accipiter gentillis*; NOGO) is a California species of special concern. Although it is widely distributed throughout much of North America, its breeding range in Southern California is poorly known (Squires and Reynolds 1997). Due to their large territorial requirements, NOGO are not expected to nest in large numbers within the Plan Area (Dudek & Associates 2003). NOGO are thought to breed between the elevations of 2000 and 2700 m, and have 2 historically-known nesting locations within the Plan Area (Dudek & Associates 2003).

According to the MSHCP, there are 34,020 acres (13,767 ha) of suitable nesting and wintering habitat in oak woodland and montane coniferous forest within the San Jacinto and San Bernardino Mountain bioregions. The MSHCP species objectives specify that the 2 known nesting locations (Lake Fulmor and San Jacinto Wilderness area) be buffered from disturbance, with the same protection given to any additional nesting locations identified in the future. Additionally, the NOGO species objectives specify that the NOGO should successfully reproduce at 75% of known nesting localities at least once in every 3 year period (Dudek & Associates 2003).

Surveys that intended to meet the NOGO species objectives were first conducted by the Biological Monitoring Program in 2008. This first year represented a pilot survey effort to determine the most effective way to evaluate the species objectives for NOGO in the future. Both Williamson's sapsucker (*Sphyrapicus thyroideus*; WISA) and Lincoln's sparrow (*Melospiza lincolni*; LISP) have the potential to co-occur with NOGO; therefore, surveys also had the potential of recording the presence of these 2 Covered Species. The following were the overall survey goals in 2008:

Survey Goals:

- A) Determine the presence of any breeding pairs of NOGO within the pilot survey area
- B) Test the feasibility of the dawn acoustical survey protocol as a method for future NOGO surveys
- C) Document the presence of WISA and LISP in NOGO survey areas

METHODS

Protocol Development

Woodbridge and Harris (2006) outline 4 different NOGO survey methods. Of these methods, the traditional approach to NOGO surveys has been broadcast acoustical surveys (the Kennedy-Stahlecker protocol); however, this method requires walking straight transects, which is problematic in very rugged and steep terrain. We selected the dawn acoustical survey protocol, which utilizes passive listening at fixed stations in lieu of line transects. Given the rugged terrain in the survey area, this protocol is the most likely to achieve complete coverage of the very large area specified in the MSHCP while utilizing available resources.

Personnel and Training

All field personnel were trained in both visual and aural identification of NOGO, WISA and LISP. Additionally, surveyors were trained in the use of the survey protocol prior to the start of the survey. The following personnel conducted NOGO surveys in 2008:

- Amanda Breon (Regional Conservation Authority)
- Robert Packard (Regional Conservation Authority)
- Lee Ripma (Regional Conservation Authority)

Study Site Selection

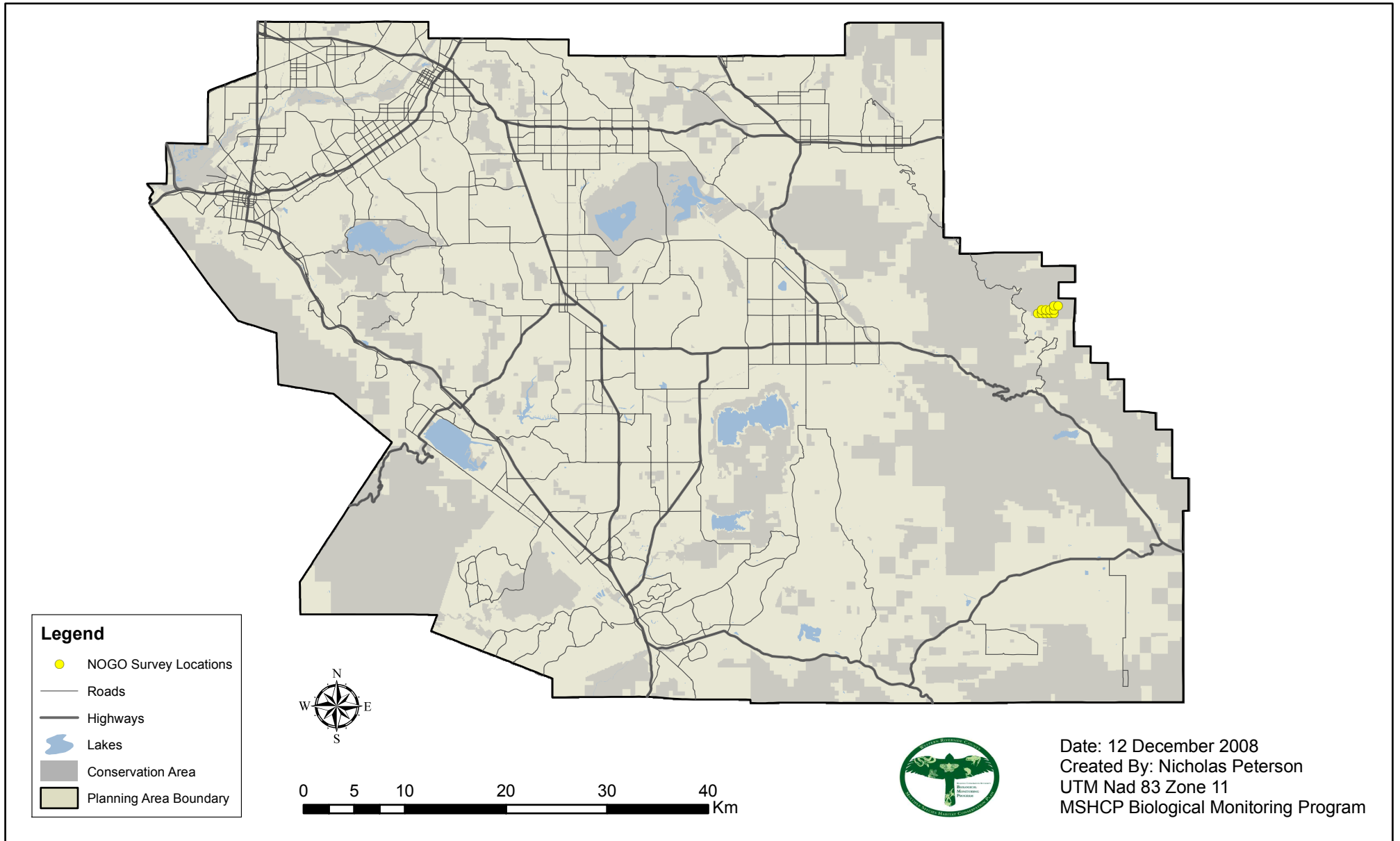
We used ArcGIS to generate listening station locations within oak woodland and montane coniferous forest habitat at elevations ranging from 2000 to 2700 m. Samples were restricted to the San Jacinto Mountains for this pilot survey. As vocalizations cannot be clearly or easily heard over distances greater than 200 m in dense coniferous forests (Dewey et al 2003), listening stations were separated by no more than 200 m within suitable habitat. Because we lacked the available staff necessary to achieve complete coverage of appropriate habitat, we selected 20 easily-accessed survey sites from the complete list of 59 listening stations (Figure 1).

Survey Methods

Survey methods used in 2008 are detailed in the *Western Riverside County MSHCP Biological Monitoring Program Protocol for the Northern Goshawk Dawn Acoustical Surveys* dated April 2008 (Appendix A). Dawn acoustical surveys are designed to correspond with the peak of NOGO vocalizations during the courtship period (Woodbridge and Hargis 2006). Dawn observation sessions need to be conducted 45 days preceding egg-laying (Dewey et al 2003). We selected a survey period of 23 March 2008 – 6 May 2008 based on backdating from egg laying dates observed in Arizona (Weins et al 2006). Because 2 listening sessions are required to determine if an area is unoccupied (Woodbridge and Hargis 2006), we planned to repeat the survey on any points where no NOGO were detected during the first survey.

Observers navigated to the listening station using a GPS and were in place 45 min before sunrise to reduce the potential for an observer effect on NOGO behavior (Dewey et al 2003). Surveys were terminated at wind speeds greater than 15 km/h or during intense precipitation (Penteriani 1999). Listening sessions were conducted from 45 min before sunrise to 90 min after sunrise for a total of 135 min. For each listening session observers recorded start and stop time, sunrise time, time, type, direction, and duration of NOGO vocalizations, and estimated distance of vocalizations (Woodbridge and Hargis 2006). NOGO vocalizations heard during the listening session were recorded as one/both of the following two types: 1) variations of the alarm call (“kak-kak-kak”) and 2) a plaintive wail call (“kreeeeee-ah”) (Squires and Reynolds 1997). Observers also kept a list of all non-target species observed during the dawn acoustical survey.

Figure 1. Map of 2008 NOGO survey locations.



Auditory detection of NOGO during courtship indicates probable nesting in the area (Woodbridge and Hargis 2006). Data collected during the dawn acoustical surveys are intended to be used to guide nest location attempts after the estimated date of hatching. Following any NOGO vocalizations, observers returned for intensive surveys with repeated follow-up visits to attempt to locate and monitor nests or fledglings.

RESULTS

In April 2008, 11 dawn acoustical surveys were completed. Surveys took place from 8 April - 17 April. Due to unexpected personnel shortages, the pilot study was terminated early. No NOGO, WISA, or LISP were detected during the 11 surveys performed in the San Jacinto Mountains.

DISCUSSION

Species Objectives

The species objective for NOGO could not be confirmed as met or unmet in 2008 because the pilot study was terminated without any NOGO observations. The Plan cites 2 known nesting locations, 1 in Fulmor Lake/Lawler Lodge area and 1 in the San Jacinto Wilderness area in the San Jacinto Mountains. Since the locations listed in the plan are too vague to complete targeted surveys, an effort was made to contact those cited in the plan. The locations are based on personal communication with the USFS and Michael Patten (Dudek & Associates 2003). Neither record could be located or verified by staff at the Biological Monitoring Program.

Recommendations for future surveys

Use of dawn acoustical surveys has the potential to achieve complete coverage of the 13,767 ha of potential NOGO habitat within the MSHCP Plan Area. To achieve complete coverage of the area, approximately 116 dawn acoustical survey stations will need to be surveyed twice, for a total of 236 listening sessions. Each observer can only complete 1 survey per day. With a usable survey period of 32 days, 8 full-time observers are required to achieve complete coverage of potential NOGO nesting habitat. Dawn acoustical surveys are therefore very costly for the Biological Monitoring Program, because they require additional seasonal staff. Another drawback is the safety of observers in the field with snow and ice in the steep terrain where these listening sessions occur. In the future, another pilot study should be done to determine if broadcast acoustical surveys could be completed in steep terrain. This method has the advantage of having a much larger effective window during which surveys can be completed. The use of alternative strategies such as recording devices could also be explored.

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Appendix A: Western Riverside County MSHCP Biological Monitoring Program Protocol for Northern Goshawk Dawn Acoustical Surveys, April 2008

Goals: Test a protocol for locating breeding pairs of Northern Goshawks (*Accipiter gentilis*; NOGO) in the San Jacinto Mountains. This survey technique relies on listening for dawn and morning vocalizations by adult NOGO at their nesting sites. It will consist of establishing listening stations within suitable nesting habitat and conducting 1.5 hr listening surveys early in the breeding season (Penteriani 1999, Dewey et al. 2003).

Rationale: The peak of adult NOGO vocal activity occurs during the courtship period (Penteriani 1999). Dawn Acoustical Surveys have a very high probability of detecting NOGO if they are present. Penteriani (1999) reported detection rates of 100% for occupied NOGO nests in France, while Dewey et al. (2003) reported 90% detection rates in conifer forests of Utah. In northern California, a 95% detection rate was reported (Keane and Woodbridge 2002, as cited in Woodbridge and Hargis 2006). Only two listening sessions are required to obtain these detection probabilities (Dewey et al. 2003).

Although the traditional approach to NOGO surveys has been Broadcast Acoustical Surveys (the “Kennedy-Stahlecker Protocol”), these surveys have much lower detection probabilities, and effectiveness is reduced at non-breeding or failed nest sites (Keane and Woodbridge 2002 as cited in Woodbridge and Hargis 2006). Furthermore, walking straight transects is problematic in very rugged and steep terrain. Dawn Acoustical Surveys have the advantage of potentially detecting any NOGO courtship behavior in the San Jacinto Mountains, regardless of nesting success. Detections using the Dawn Acoustical Surveys can be followed with searches for active nests within a narrowed area later in the nesting season.

Timing: Dawn Acoustical Surveys will be conducted March 23-May 6 to correspond with peak NOGO vocalizations (Penteriani 1999, Weins et al. 2006). Dawn observation sessions need to be conducted 45 days preceding egg-laying (Dewey et al. 2003). Weins et al. (2006) found the average fledge date was July 16 in Northern Arizona. Backdating from this fledge date dictated survey timing, because local knowledge of breeding phenology in the San Jacinto Mountains is lacking.

Survey Locations: Suitable habitat within the MSHCP plan area from 2000-2700 m will be surveyed for breeding NOGO pairs. Although specific habitat information is lacking for nesting NOGO in the San Jacinto Mountains, throughout their range NOGO show preference for dense, old growth forest with high canopy closure (Squires and Reynolds 1997). Listening stations will be placed within preferred habitat (mapped using a GIS layer of vegetation types) between 2000 and 2700 m elevation. Because vocalizations cannot be clearly or easily heard over distances >200 m in dense coniferous forests (Dewey et al. 2003), listening stations will have no more than a 200 m radius within suitable NOGO habitat.

Methods: Listening sessions will occur during the peak vocalization period, 45 minutes before sunrise to 90 minutes after sunrise. For each listening session observers recorded start and stop time, sunrise time, time, type, direction, and duration of NOGO vocalizations, and estimated distance of vocalizations (Woodbridge and Hargis 2006). NOGO vocalizations heard during the listening session were recorded as one/both of the following two types: 1) variations of the alarm call (“kak-kak-kak”) and 2) a plaintive wail call (“kreeeee-ah”; Squires and Reynolds 1997).

Observers will be settled at the listening station 45 minutes before sunrise to avoid/reduce the potential for NOGO to alter their behavior in response to the presence of observers (Dewey et al. 2003). Surveys will be terminated at wind speeds greater than 15 km/hr or during intense precipitation (Penteriani 1999).

If no NOGO are detected during the first listening session, a repeat session will be conducted before May 6, at least one week after the first session. Two listening sessions are required to assign “unoccupied” status to an area (Woodbridge and Hargis 2006).

Locating nest sites: Auditory detection of NOGO during courtship indicates probable nesting in the area (Woodbridge and Hargis 2006). Nest location attempts will not begin until after the estimated date of hatching.

Training: Observers will be familiar with NOGO vocalizations before beginning listening sessions. Observers will be able to differentiate NOGO calls from that of Cooper’s and Sharp-shinned Hawks. While at listening stations, observers will also record the presence of other covered species, particularly Williamson’s Sapsucker (WISA) and Lincoln’s Sparrow (LISP). Observers will be trained to identify LISP by sight and sound, and to distinguish WISA vocalizations from those of Northern Flicker, Red-breasted Sapsucker, and Red-naped Sapsucker. Observers will be able to pass an auditory identification test before they will be allowed to conduct Dawn Acoustical Surveys.

Field Equipment:

- Table of sunrise times
- Bird identification book
- Handheld GPS Unit
- Thermometer
- Binoculars
- Field Guide
- Data Sheets
- Compass
- Anemometer

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